



# CEREAL RUST BULLETIN

Issued by:

**Cereal Disease Laboratory**

U.S. Department of Agriculture  
Agricultural Research Service  
1551 Lindig St, University of Minnesota  
St. Paul, MN 55108-6052  
(612) 625-6299  
FAX (651) 649-5054  
[oluseyi.fajolu@usda.gov](mailto:oluseyi.fajolu@usda.gov)

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<http://www.ars.usda.gov/Main/docs.htm?docid=9970>

Or, send an email to: [oluseyi.fajolu@usda.gov](mailto:oluseyi.fajolu@usda.gov)

Reports from this list as well as all Cereal Rust Bulletins are maintained on the CDL website (<http://www.ars.usda.gov/mwa/cdl>)

- Wheat stem rust was detected in Minnesota and South Dakota.
- Wheat leaf rust has been reported in 20 states and is generally low in most areas.
- Wheat stripe rust was recently found in Montana, South Dakota, and Ohio.
- Oat crown rust was observed in South Dakota.
- Barley stem rust was found in Alabama and Minnesota.
- Barley leaf rust was reported in Texas, Washington, Virginia, Maryland, and New York.
- Rye stem rust and rye leaf rust were found in Minnesota.
- *Request for cereal rust observations and samples in 2023*

For original, detailed reports from our cooperators and CDL staff, please visit the [Cereal Rust Situation \(CRS\)](#) reports page on the [CDL website](#).

**Weather conditions.** According to the “USDA Weekly Weather and Crop Bulletin” and the “U.S. Agricultural Weather Highlights” released on July 11, heavy rain across portions of central Plains benefited summer crops. Rain also soaked the Northeast. Parts of the South experienced showers and thunderstorms, providing some relief for the extended hot, humid days. In contrast, parts of the upper Midwest received little or no rain. Hot and dry weather prevailed in much of the West, especially in the Northwest. Weekly temperatures averaged more than 5° F above normal in several areas. Spring-sown small grains experienced drought stress. About 21% of the spring wheat crop in Washington was rated in very poor to poor condition on July 9.

**Crop conditions.** According to the July 11 report, 46% of the nation’s winter wheat acreage had been harvested, compared to 62% last year and 59% over the past five years. Forty percent of the 2023 winter wheat crop was reported in good to excellent condition, nine percentage points above the same time last year. As of July 9, 72% of the nation’s spring wheat crop had headed, compared to 41% last year and 67% over the past five years. Forty-seven percent of the nation’s spring wheat was rated in good to excellent condition compared to 70% the same time last year. By July 9, 87% of 2023 oat acreage has headed, nine percentage points above last year and one point above average. Forty-seven percent of the nation’s oat crop was rated in good to excellent condition, 11% points below the same time last year. Sixty-four percent of the nation’s barley crop has headed, four percentage points ahead of last year but four points behind the five-year average. Fifty-two percent of the 2023 barley acreage was rated in good to excellent condition, six percentage points below the same time last year.



**Wheat stem rust.** Wheat stem rust was detected in Minnesota and South Dakota. Stem rust was previously reported in Texas, Oklahoma, Kansas, and Louisiana. Races QFCSC and MCCDC were identified from stem rust samples collected from Louisiana, but only race QFCSC was detected from Texas, Oklahoma, and Kansas samples (see Cereal Rust Bulletin #4).

*South Dakota* – Trace levels of wheat stem rust were reported in growers' fields and breeding nurseries in central and south-central parts of the state.

*Minnesota* – On July 11, wheat stem rust was found in the sentinel plots of the yield trials in Sand Plains Research Farm east of Becker, Sherburne County (east central MN). Disease incidence was at a trace level, but severity ranged from moderate to high on susceptible cultivars. Similar stem rust level was present in the sentinel plots in the trial west of Montgomery, Le Sueur County (south central MN).

**Wheat leaf rust.** Wheat leaf rust was generally low in the Midwest. The disease was found in five out of the twenty-eight wheat fields scouted during an annual survey conducted by USDA-ARS Cereal Disease Laboratory staff along the Ohio Valley on June 20 to 23. Leaf rust incidence was low in the region compared to previous years' surveys. To date, wheat leaf rust has been reported in 20 states (see Cereal Rust Bulletin #4).

*South Dakota* – Late-season leaf rust was seen on winter wheat in the eastern SD in the second week of July. Low levels of leaf rust were reported in central and south-central parts of the state.

*Minnesota* – During the cereal rust survey at the University of Minnesota Southern Research Centers on July 10, leaf rust was at trace levels in plots of the susceptible cultivar Morocco in Waseca County, and leaf rust was not found on Morocco in Redwood County. At both locations, spring wheat variety trials were free of rust pustules. According to Jim Kolmer, 2023 has the lowest leaf rust in southern MN during the second week of July compared to the previous years. Trace leaf rust incidence was observed in the sentinel plots of the yield trials east of Rochester, Olmsted County, and west of Montgomery.

*Illinois* – Up to 10% severity and 1% incidence of natural leaf rust were found in wheat trial plots at the University of Illinois Champaign research fields. Wheat ranged from soft to hard dough growth stages.

*Indiana* – Low incidence but 5–50% severity of wheat leaf rust was present in the Purdue University Agricultural Center for Research and Education site near West Lafayette. Wheat ranged from late milk to early soft dough.

*Ohio* – Leaf rust was approximately 30% incidence and 10–60 % severity at the Ohio State University Agricultural Research and Development Center station near Hoytville. But leaf rust severity ranged from 5 to 100% at the research station in Wooster. Leaf rust was found in one private field within a half mile of the OARCD site near Hoytville. Wheat ranged from late milk to early soft dough.

*Michigan* – The Cereal Disease Laboratory received a wheat leaf rust collection from Ingham County in early July. The wheat crop was at the kernel hard growth stage.

*New York* – Leaf rust was found on susceptible winter wheat in variety plots in Ithaca, Tompkins County, on June 30. The wheat crop was at the late dough stage.

**Wheat leaf rust collection map.** Please visit: <http://www.ars.usda.gov/Main/docs.htm?docid=9757>

**Wheat cultivar *Lr* gene postulation database.**

Please visit: [Leaf rust resistance gene postulation in current U.S. wheat cultivars](#)

**Wheat stripe rust.** So far in 2023, stripe rust has been reported in Texas, Oklahoma, Kansas, Nebraska, South Dakota, Louisiana, Mississippi, South Carolina, Virginia, Kentucky, New York, Ohio, California, Oregon, Washington, and Montana (see [Cereal Rust Bulletin # 4](#)).

*Montana* – Severe stripe rust infection was found in the experimental variety in Kalispell, Flathead County, on July 6.

*South Dakota* – Trace levels of stripe rust were reported in breeding nurseries in the central and south-central parts of the state.

*Ohio* – Stripe rust was observed in a single field in Wooster out of the 28 wheat fields scouted in the Ohio Valley region. Severity was between 5–30%, and incidence was approximately 5%.

*New York* – A trace level of stripe rust was seen on winter wheat in Ithaca wheat variety plots on June 30. Previously, a localized stripe rust epidemic was observed in three growers' fields in Yates County (see [Cereal Rust Bulletin # 4](#)).

**Stripe rust observation map.** Please visit: <http://www.ars.usda.gov/Main/docs.htm?docid=9757>

**Please send wheat and barley stripe rust collections as soon as possible after collection to: Dr. Xianming Chen, USDA-ARS (Washington State University; see details in attached rust collection guide).**

**Oat crown rust.** Oat crown rust was found in Texas, Louisiana, Mississippi, Alabama, Georgia, Florida, Minnesota, and South Dakota (see [Cereal Rust Bulletin # 4](#)).

*South Dakota* – The Cereal Disease Laboratory received an oat crown rust sample from Brooking County in early July. It was the first report of crown rust in the state.

*Minnesota* – Up to 25% incidence of oat crown rust was observed in the sentinel plots of the yield trials east of Rochester, west of Montgomery, and east of Becker. Crown rust was present in plots of susceptible Marvelous at the University of Minnesota Southern Research Centers. *Puccinia coronata* infected many varieties, including Reins and SD-Buffalo, at the University of Minnesota west central research plots in Fergus Falls. Disease incidence was up to 5 %, but severity ranged from moderate to susceptible. Oat was at watery ripe to late milk growth stages.

**Oat crown rust collection map.** Please visit: <http://www.ars.usda.gov/Main/docs.htm?docid=9757>

### **Barley stem rust.**

*Minnesota* – On July 11, barley stem rust was observed in the sentinel plots in the trial west of Montgomery.

*Alabama* – Barley stem rust was found in a commercial field in Madison, Limestone County, on May 19. Disease severity and incidence ranged from 1–20 %. Barley was at ripening growth stage. The stem rust from this location was determined to be race QFCSC.

**Barley leaf rust.** Barley leaf rust was found in Texas, Washington, Virginia, Maryland, and New York (see [Cereal Rust Bulletin #2](#) and [#4](#)).

*Virginia* – Samples of infected Wysor and Thoughtbred varieties from Accomack and Nottoway counties were received at the Cereal Disease Laboratory in May. Barley leaf rust was 50–70% severity and incidence during sampling. Barley was at the ripening growth stage.

*Maryland* – The Cereal Disease Laboratory received a barley leaf rust collection from Maryland.

*New York* – Trace levels of leaf rust were observed on spring barley variety trials in Ithaca and in border plots of Saturn in the Cornell winter cereal variety trial in Scottsville, Monroe County. Barley was at the milky ripe growth stage.

**Rye stem rust.** Rye stem rust was found in the sentinel plots of the yield trials in Becker, Minnesota. Rye stem rust was previously reported in Texas (see [Cereal Rust Bulletin #1](#)).

**Rye leaf rust.** Rye leaf rust was found in the sentinel plots of the research trials east of Rochester, Minnesota.

## Request for cereal rust observations and samples

Cereal Disease Laboratory, USDA-ARS, St. Paul, MN

*(Please save this for future reference)*

### Cooperators' assistance is critical to our work

We depend on the assistance of our cooperators for cereal rust observations and samples (as well as other significant small grain disease observations). If you are able, please collect rust samples and send them to us. We sincerely thank all those who have assisted us in the past and hope the assistance continues this year and in the future.

### Observations

If you have information on the cereal rust situation in your area that you would be willing to share with the group, please email your observations to:

[CEREAL-RUST-SURVEY@LISTS.UMN.EDU](mailto:CEREAL-RUST-SURVEY@LISTS.UMN.EDU)

Or, to: Dr. Oluseyi Fajolu ([oluseyi.fajolu@usda.gov](mailto:oluseyi.fajolu@usda.gov))

*We would like to include your name and email address so others can contact you. If, however, you prefer not having your name or email address appear with the information, please let us know when submitting your observations.*

### Information of most importance

We welcome any information you can provide but are particularly interested in the following:

- Location (state, county, city)
- Rust (leaf rust, stem rust, stripe rust, crown rust)
- Host (wheat, barley, oat, grasses, etc.)
- Cultivar or line name if known
- Grain class if known
- Severity and prevalence
- Growth stage: when the rust likely arrived, when infection was first noted, and current growth stage
- Where rust is found on the plants, e.g., lower leaves, flag leaf, etc.

### Guidelines for making cereal rust uredinial collections\*\*

Reports on the distribution of races of cereal rust fungi are an important part of our annual cereal rust surveys. We routinely collect and test isolates of stem rust (wheat, oat, and barley), wheat leaf rust, oat crown rust and barley leaf rust. We are most interested in small grain collections (wheat, barley, oat and rye), but are also interested in stem rust, leaf rust, and stripe rust collections from grasses, e.g.:

- Jointed goatgrass (*Aegilops cylindrica*)
- Ryegrasses (*Elymus* spp.)
- Wheatgrasses (*Elytrigia* spp.)
- Wild barleys (*Hordeum* spp.)
- Wild oat (*Avena fatua*)
- Common grasses, e.g., *Agropyron*, *Agrostis*, *Festuca*, *Leymus*, *Lolium*, *Phleum*, and *Psathyrostachys* spp.

*Images and descriptions of the above grass species can be found on the USDA Natural Resources Conservation Service's [PLANTS Database](https://www.nrcs.usda.gov/plants) website*

1. Rust pustules should be fresh and fully developed, except when this may not be possible, i.e., the first uredinial collections found early in the season.
2. When rusted small grain or grass plants are encountered, please cut 5 to 10 sections of plant stem (if possible, avoid including plant nodes as they do not readily air dry) or leaf, 4 inches long with large and small pustules and place in a regular paper mail envelope (**Please Do Not use plastic or waterproof envelopes**). Do not staple or tape the envelope; instead fold the flap shut.
3. Important information should be recorded for each collection, e.g., date, county, state, cultivar or line, crop stage, whether collection is from a nursery or commercial field, etc. Please use our data collection form ([standard pdf](#) or [fillable pdf](#)) if possible. If the grass genus or species is unknown to the collector, please send a head in a separate bag or envelope, indicating which collection it is associated with to aid in identification.
4. Please avoid exposing samples to direct sunlight or unusual heat of any kind, e.g. car dashboard, outside mailboxes, etc. Samples should be kept at room temperature for 2–3 days to allow the plant material to dry. Afterwards the samples should be placed in a cooler or refrigerator before they are mailed. Please do not keep samples in a freezer. The samples should be sent to us as soon as possible after the samples have dried.
5. Please promptly mail the envelope(s) with the appropriate collection form inside each envelope to this address:

Cereal Disease Laboratory, USDA-ARS  
1551 Lindig Street  
University of Minnesota St. Paul,  
Minnesota 55108

**\*\* Stripe rust collections should be sent by FedEx or UPS to:**

Dr. Xianming Chen USDA-ARS  
Washington State University, 410 SE Dairy RD, 114B – 101, Pullman, WA 99164

By regular mail: Dr. Xianming Chen 361 Johnson Hall  
P.O. Box 646430 Washington State University Pullman, WA 99164-6430

*Note:* Stripe rust collections are vulnerable to heat and do not survive long at warm temperatures; therefore, if shipment of collections for race identification is delayed, their viability will be greatly reduced. An overnight courier service is preferred for sending stripe rust collections.

If you have any questions regarding stripe rust samples, contact Dr. Xianming Chen, Phone 509-335-8086; e-mail: [xianming@wsu.edu](mailto:xianming@wsu.edu) or [xianming.chen@ars.usda.gov](mailto:xianming.chen@ars.usda.gov)

**Thank you in advance for your assistance!**

### **Current cereal rust situation**

For the latest cereal rust situation reports, please subscribe to the cereal rust survey listserv list\*.

Instructions can be found at:

<http://www.lsoft.com/scripts/wl.exe?SL1=CEREAL-RUST-SURVEY&H=LISTS.UMN.EDU>

Or, if you prefer, simply send a subscription request to Dr. Oluseyi Fajolu ([oluseyi.fajolu@usda.gov](mailto:oluseyi.fajolu@usda.gov)).

All messages sent to the list are archived on the CDL website: <http://www.ars.usda.gov/Main/docs.htm?docid=9757>

\*The sole purpose of the Cereal Rust Survey listserv list is to provide a format for cereal researchers and extension personnel to share observations of cereal rusts and other cereal diseases. We make no warranty about any information shared on this listserv or its utility or applicability. Mention of any product, brand, or trademark does not imply endorsement or recommendation of that product, brand, or trademark by USDA-ARS, or any of the participants on this listserv. By enrolling on this listserv list, participants understand and agree to abide by these conditions.